REMARKS

This is in response to the Office Action dated June 13, 2007. Applicants respectfully request reconsideration and allowance of the application in view of the above-amendments and the following remarks.

I.   DRAWINGS

The drawings were objected to because letters and numbers are not well-defined. Applicant is presently obtaining new formal drawings that make the characters more clear and incorporate the changes submitted with the previous amendment.

Replacement sheets will be submitted shortly as part of a supplemental response.

II.   CLAIM OBJECTIONS

Claim 19 is amended as suggested in the Office Action to correct the dependency to claim 18, as opposed to claim 20 in order to make the reference to an "apparatus" consistent and to provide proper antecedent basis for the demodulation device.

In addition, various claims are amended as suggested in the Office Action to remove "characterized" and replace it with appropriate substitutes that are more consistent with U.S. practice.

III.   CLAIM REJECTIONS

-     Claims 1-4, 6, 12 and 15-21 were rejected under §102(b) as being allegedly anticipated by Kober et al. U.S. Patent No. 6,252,535.
-     Claims 9, 11 and 14 were rejected under §103(a) as allegedly being unpatentable over Kober et al. in view of Applicant's admitted prior art (AAPA).

- Claims 8 and 13 were rejected under §103(a) as allegedly being unpatentable over Kober et al.

A. **Summary of Present Application**

According to the present disclosure, the ratio between the number of branches (2M) and the order (M) of each expander and decimator is 2. In other words, there are more (twice) branches than the order.

1. The disclosure regards transmission of multicarrier signals called BFDM/OM, for:

   - <u>Biorthogonal</u> Frequency Division Multiplex;
   - <u>Offset</u> Modulation.

   The disclosure is more precisely directed to modulation using a <u>transmultiplexer structure</u>.

2. As it appears in claim 1, the present application proposes a new and non-obvious structure of such a transmultiplexer (the general principle of using a transmultiplexer being known in the art).

   According to claim 1, this transmultiplexer comprises:

   - At modulation, a bank of synthesis filters having <u>2M</u> parallel branches each comprising an expander of order <u>M</u>;
   - At demodulation, a bank of analysis filters having <u>2M</u> parallel branches each comprising a decimator of order <u>M</u>.

3. One of the features of claim 1 is therefore the ratio between the number of branches (2M) and the order (M) of each expander and decimator.

According to the prior art, the number of branches is always <u>less</u> than the expander/decimator order. On the contrary, according to claim 1, the number of branches is <u>more</u> than the expander/decimator order and specifically the <u>double.</u>

This approach is clearly new, and non obvious. There is no disclosure of this feature in the art, nor any suggestion to choose a greater value (2M) for the number of branches, and a fortiori, to choose this value as being exactly the double of the expander/decimator order.

> **4.** This new approach, specifically designed for BFDM/OM signals appears to be very efficient, with numerous prototype filters.

B. **Patentability**

> 1. In the first Office action, the Examiner identified the document WO 98/09383 (Yeap et al.), which was considered relevant against claims 1, 2, 8, 12, 13, 15, 16, 18 and 20.

The Examiner also stated that other claims are obvious, over Yeap et al. in view of the prior art cited in the application.

In the response, Applicant explained that this analysis was not correct, stating that the discussed invention does not regard the general principle of transmitting a multicarrier signal using a transmultiplexer structure (with analysis and synthesis filters), but a specific and well defined structure of such a transmultiplexer, characterized by the ratio 2M/M:

> - <u>2M</u> branches for
> - expander/decimator order <u>M</u>,

which is designed specifically for BFDM/OM signals.

Each branch has the same expander/decimator order <u>M</u>.

    2.   In the second Office action, the Examiner cites a new document (US-6 252 535 – KOBER), considered relevant according to §102(b) for claims 1-4, 12 and 15-21, and to USC §103(a) for claims 9-14. Claims 5 and 7 would be allowable.

    3.   KOBER does indeed describe, particularly in relation to figure 4, a transmultiplexer structure. The filter bank 46 comprises M branches (numbered 44a to 44n) each comprising an expander numbered 64a to 64n.

The Examiner suggests in the Office Action, that there would be 2M branches associated to an expander of order M (please refer to page 4, lines 1 to 3).

    4.   This analysis is erroneous.

Indeed, as well as in the previously discussed Yeap et al. document, this document does not disclose or suggest that the number of branches is twice the order of expansion.

On the contrary, according to the method described in KOBER, the number of branches (M) is typically equal to the order of decimation (M). Referring to the paragraph in column 4, lines 35 to 49 cited by the Examiner, it is explicitly specified that an « M-fold decimation » is implemented and it is confirmed by figure 4 and by column 5, lines 33 to 35, that M is also the number of sub-branches or branches.

Perhaps the Examiner is confused by the numbering (from « a » to « n ») of the bank filter branches. However, it is clear when reading the description that branch 44n is in fact the Mth

branch.

      5.   Consequently, the method described in this document is classic: the number of sub-branches is equal to M, i.e. the expansion-decimation factor.

This does not in any way suggest, as already expressed, the specific approach of claim 1, which differentiates itself by the presence of 2M branches. This approach is not disclosed, nor is it suggested by this document.

KOBER, as well as the previously identified documents, confirm on the contrary, and as Applicant stated in response to the first Office Action, that the number of branches is, according to prior art, inferior or equal the order of decimation-expansion, and that the person skilled in the art is persuaded that this should always be so.

The approach of claim 1, which goes against this assumption, is thus inventive.

      C.   **Request For Telephone Interview**

Applicant respectfully requests a telephone interview with the Examiner to discuss the KOBER document in view of Applicant's claims in the event that the Examiner continues to interpret KOBER as disclosing the presence of 2M branches.

IV   CONCLUSION

As explained in response to the first Office Action, the claims specify that the number of branches of the transmultiplexer filters is exactly twice the decimation-expansion factor associated to each branch.

The method described in the document cited by the Examiner does not disclose this approach. On the contrary, it describes, classically, that the decimation-expansion factor is equal to the number of branches (M).

As a result, claims 1-9 and 11-21 are new and non-obvious in view of Kober et al. either alone or in combination with the AAPA.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,
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